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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,674	08/19/2003	Dong-ki Hong	1293.1800	3494

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EXAMINER	
CHU, KIM KWOK	
ART UNIT	**PAPER NUMBER**
2627	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/642,674	HONG ET AL.	
	Examiner	Art Unit	
	Kim-Kwok CHU	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *RCE filed on 4/4/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 15-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 15-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/19/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 4, 2007 has been entered.

Response to Remarks

2. Applicant's Remarks filed on February 21, 2007 have been fully considered but it is not persuasive.

With respect to the independent Claims 1 and 7, Applicant does not agrees that the prior art (U.S. Patent 6,282,161) of Son's optimum tilt adjusting values are stored in the memory (page 5 of the Remarks, lines 14 and 15). For example, Applicant states that Son's tilt control value is calculated at the recording position by interpolation with reference to the outputs S_inrec and S_outrec stored in the memory (page 5 of the Remarks, lines 18 and 19). Accordingly, Son obtains the tilting adjusting values by calculating (interpolating) a tilt angle if no tilt angle is found in the memory same as Applicant's tilt angle in his Claim 1, lines 5 and 6. With respect to correct the tilt of the disc, both Applicant and

the prior art of Son use a calculated tilt angle if the tilt angle is not found in the memory (See Applicant's Claim 1. last paragraph). In other words, with respect to Applicant's Claims 1 and 7, even if the prior art of Son's tilt angle is repeatly calculated every time when a tilt control is needed, Son still teaches Applicant's limitation in Claim 1 where if the tilt angle is not found in the memory, the tilt of the disc is corrected using the calculated tilt angle.

With respect to the independent Claims 3 and 5, Applicant states that each recording and reproducing sector of the disc becomes a sector in which a tilt is only corrected one time (page 6 of the Remarks, lines 11-13). Accordingly, the prior art of Son's optimum tilt values over the whole disc are calculated and stored in the memory. Note that Applicant merely claims a memory that stores a tilt angle for each sector and does not claim how and when to obtain it. In other words, the prior art of Son's calculated tilt values over the whole disc can be considered as Applicant's tilt angles for each sectors.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> *A person shall be entitled to a patent unless--*
> *(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

4. Claims 1-6 and 15-17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Son et al. (U.S. Patent 6,282,161).

5. Son teaches a method of correcting a tilt in a disk drive having all of the steps as recited in claims 1 and 2. For example, Son teaches the following:

(a) with respect to Claim 1, detecting a tilt of a disc 11 loaded in the disc drive (Figs. 2 and 7, steps S710); searching a memory 38 in the disc drive for a tilt angle for a recording or reproducing sector of the disc in which the tilt is detected (Figs. 2 and 7, step S712; column 7, lines 22-26); calculating (by interpolation) a tilt angle for the recording or reproducing sector based on the detected tilt of the disc if no tilt angle is found in the memory 38 (Fig. 7, step S714; column 7, lines 31-33); correcting the tilt of the disc (Fig. 7, step S716); storing the calculated tilt angle in the memory so that the calculated tilt angle is used for the recording or reproducing sector (Fig. 7, step S712); if a

tilt angle is found in the memory 38, the tilt of the disc is corrected using the found tilt angle, and if the tilt angle is not found in the memory 38, the tilt of the disc is corrected using the calculated (interpolated) tilt angle (Fig. 7, steps S710-S716).

(b) with respect to Claim 2, the recording or reproducing sector of the disc 11 is based on information on the position of a pickup based on the number of pulses (digital signals) for driving a motor (disk motor) for controlling movement of the pickup in the disc drive (Fig. 2; optical pickup is moved by digital signal).

6. Son teaches a tilt correcting apparatus having all of the elements and means as recited in claims 3, 4 and 15. For example, Son teaches the following:

(a) with respect to Claim 3, a pickup that radiates light onto the disc (Fig. 2); a tilt detector 26 that detects a tilt of the disc using the pickup (Fig. 2); a motor 28 that drives the pickup to correct the tilt of the disc 11; a memory 38 that stores a tilt angle for each of the plurality of recording and reproducing sectors of the disc 11 (Figs. 2 and 4; optimum tilt control values along the disc surface are calculated and stored); a controller 36 that, if the tilt of the disc is detected, searches the memory for the tilt angle for the recording or reproducing sector of the disc wherein

the pickup is currently positioned, and controls driving of the motor using the searched tilt angle (Figs. 2 and 7).

(b) with respect to Claim 4, if the tilt angle is not found in the memory, the controller 36 calculates the tilt angle for the recording or reproducing sector of the disc wherein the pickup is currently positioned based on the tilt of the disc, corrects the tilt of the disc using the calculated tilt angle, and stores the calculated tilt angle in the memory (Fig. 7; steps S706 and S710-S716).

(c) with respect to Claim 15, the memory 38 stores a position information for each of the plurality of recording and reproducing sectors of the disc expressed as a number of pulses (digital signal) necessary to drive a stepping motor of the disc drive (Figs. 2 and 4; optimum tilt control values is stored in digital form).

7. Claims 5 and 6 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claim 5 however also recites the following limitation which is also taught by the prior art of Son:

(a) as in claim 5, the pickup moves in a radial direction of the disc (Figs. 2 and 7; steps S704 and S706).

8. Method claims 16 and 17 are drawn to the method of using the corresponding apparatus claimed in claims 3 and 15. Therefore method claims 16 and 17 correspond to apparatus claims 3 and 15 and are rejected for the same reasons of anticipation as used above.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

10. Claims 7 and 8 are rejected under 35 U.S.C. 103 (a) as being unpatentable over by Son et al. (U.S. Patent 6,282,161) in view of Nishiwaki (U.S. Patent 6,704,254).

Son teaches a tilt correcting apparatus very similar to that of the present invention as recited in claims 7 and 8. For example, Son teaches the following:

(a) with respect to Claim 7, detecting a tilt of a disc 11 loaded in the disc drive (Figs. 2 and 7, steps S710); searching a memory 38 in the disc drive for a tilt angle for a recording or reproducing sector of the disc in which the tilt is detected (Figs. 2 and 7, step S712; column 7, lines

22-26); calculating (by interpolation) a tilt angle for the recording or reproducing sector based on the detected tilt of the disc if no tilt angle is found in the memory 38 (Fig. 7, step S714; column 7, lines 31-33); correcting the tilt of the disc (Fig. 7, step S716); storing the calculated tilt angle in the memory so that the calculated tilt angle is used for the recording or reproducing sector (Fig. 7, step S712); if a tilt angle is found in the memory 38, the tilt of the disc is corrected using the found tilt angle, and if the tilt angle is not found in the memory 38, the tilt of the disc is corrected using the calculated (interpolated) tilt angle (Fig. 7, steps S710-S716).

However, Son does not teach the following:

(a) with respect to Claim 7, tilt correcting method is implemented by a computer readable encoded with processing instructions (program).

Nishiwaki teaches an optical disk control method where its tilt adjustment is controlled by a program stored in a recording medium (column 17, claim 14).

In order to access compensated values in a tilt correcting operation, a software servo program is more flexible than a hardware device such as a digital signal processing unit. Therefore, when there is a disc servo control where variables such as tilt correcting values needed to be stored, it would have been obvious to one of ordinary

skill in the art to implement the tilt servo method such as Son's in form of Nisiwaki's software executable instructions and stored it in Nishiwaki's computer readable recording medium instead of electronic circuits, because the software design cost less and its instructions/steps can be updated or modified.

(b) with respect to claim 8, Son further teaches that the recording or reproducing sector of the disc 11 is based on information on the position of a pickup based on the number of pulses (digital signals) for driving a motor (disk motor) for controlling movement of the pickup in the disc drive (Fig. 2; optical pickup is moved by digital signal).

11. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington, can be reached on (571) 272-4483.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

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April 12, 2007
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